

WHAT IS CLAIMED IS:

1. A simulation apparatus for simulating, based on design information of a design model designed in a virtual three-dimensional space while one or more standard part models standardized in advance based on a specification model are arranged in the design model, working for the standard part models arranged in the design model, comprising:

a working means model information storage section for storing information regarding a working means model related to one or more standard part models for working the standard part models;

a working means model information extraction section for referring, based on information regarding the standard part models arranged in a design model, to said working means model information storage section to extract information regarding a working means model to be used to work the standard part models arranged in the design model; and

a working simulation execution section for executing a simulation of the working for the standard part models with the working means model based on design information of the design model and the information regarding the working means model extracted by said working means model information extraction section.

2. A simulation apparatus as claimed in claim 1,

5

10

20

25

5

10

15

25

working simulation execution section and the workability  
~~evaluation coefficient stored in said workability~~  
evaluation coefficient storage section.

5

8. A simulation apparatus as claimed in claim 1,  
wherein said working means model information storage  
section stores information regarding a working condition  
necessary for working for the working means model as  
information regarding the working means model, and said  
working simulation execution section executes a working  
simulation based on the information regarding the working  
condition of the corresponding working means model stored  
in said working means model information storage section.

15

9. A simulation apparatus as claimed in claim 8,  
wherein said working means model information storage  
section stores information regarding working spaces  
necessary for working with the working means model as the  
information regarding the working conditions of the  
individual working means model.

20

25

10. A simulation apparatus as claimed in claim 4,  
wherein said working means model information storage  
section stores information of a plurality of reference  
positions for any working means model which allows  
operation thereof in a plurality of different methods,  
and said working simulation execution section executes

5 a working simulation according to the plurality of  
operation methods.

10 11. A simulation apparatus as claimed in claim 7,  
5 wherein said working means model information storage  
section stores information of a plurality of reference  
positions for any working means model which allows  
operation thereof in a plurality of different methods and  
said working simulation execution section executes a  
10 working simulation according to the plurality of  
operation methods while said workability evaluation  
coefficient storage section stores a workability  
evaluation coefficient which makes a reference for  
evaluation of a workability for each of the operation  
15 methods of the working means model, and said workability  
evaluation section evaluates the workability of the  
working means model for the each of the working methods  
based on a result of execution of the working simulation  
according to the working method and the workability  
20 evaluation coefficient stored for the operation method  
of the working means model in said workability evaluation  
coefficient storage section.

25 12. A simulation apparatus as claimed in claim 1,  
wherein at least one of a fastening part model, an  
adjustment part model and a connector part model is used  
for the standard part models.

13. A simulation method for simulating, based on data regarding a design model displayed in a virtual three-dimensional space and designed while one or more standard part models standardized in advance based on a specification model are arranged in the design model, workability according to a working means model used to work the standard part models arranged in the design model, comprising the steps of:

5 relating a working means model to one or more standard part models;

10 acquiring the working means model related to the standard part models used upon designing of a design model;

15 executing a simulation of working to be performed for the standard part models using the acquired working means model; and

displaying a process of the execution of the simulation in a virtual three-dimensional space.

20

14. A simulation method as claimed in claim 13, wherein, as the simulation of the working to be performed for the standard part models, a simulation of at least one kind of working from among assembling working, disassembling working, adjustment working and maintenance working for the standard part models is performed.



wherein a process through which the working means model arrives at one of the standard part models which provides a subject position and a manner of working performed based on a condition defined in advance for the working means model are displayed as the process of execution of the simulation of the working.

20. A simulation method as claimed in claim 19, wherein, after the working performed based on the condition defined in advance for the working means model is completed, a process through which the working means model is spaced away from the subject position based on a condition defined in advance for the standard part models is displayed, and after the working means model is spaced by a predefined distance away from the subject position, the display of the working means model or the working means model and the standard part models is erased.

21. A simulation method as claimed in claim 13, wherein, when interference occurs with the working means model in a process of execution of the working to be performed for the standard part models with the working means model, an occurrence condition of the interference is displayed.

22. A computer-readable recording medium having a



5

10

15

15

20

25

said designing supporting means including an attribute information extraction section for referring

5  
d 10

